

Hall Effect DC Current Sensor CYHCT-C4V

This Hall Effect current sensor is based on open loop principle and designed with a solid core and a high galvanic isolation between primary conductor and secondary circuit. It can be used for measurement of DC current etc. The output of the transducer reflects the real wave of the current carrying conductor.

Product Characteristics	Applications
- Excellent accuracy - Very good linearity - Light in weight - Less power consumption - Window structure - Electrically isolating the output of the transducer from the current carrying conductor - No insertion loss - Current overload capability	Photovoltaic equipment - Frequency conversion timing equipment - Various power supply - Uninterruptible power supplies (UPS) - Electric welding machines - Numerical controlled machine tools - Electrolyzing and electroplating equipments - Electric powered locomotive - Microcomputer monitoring - Electric power network monitoring

Electrical Data/Input (Table 1)

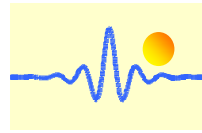
Primary Nominal DC Current I_r (A)	Primary Current Measuring Range I_p (A)	DC Output Voltage V_{out} (V)	Part number (see application notes on page 3)
50A	0 ~ 50A / ± 50 A	x=0: 0~4VDC x=3: 0~5VDC x=8: 0~10VDC x=6: 0~ ± 4 VDC x=1: 0~ ± 5 VDC x=9: 0~ ± 10 VDC	CYHCT-C4V-U/B50A-xn-C
100A	0 ~ 100A / ± 100 A		CYHCT-C4V-U/B100A-xn-C
200A	0 ~ 200A / ± 200 A		CYHCT-C4V-U/B200A-xn-C
300A	0 ~ 300A / ± 300 A		CYHCT-C4V-U/B300A-xn-C
400A	0 ~ 400A / ± 400 A		CYHCT-C4V-U/B400A-xn-C
500A	0 ~ 500A / ± 500 A		CYHCT-C4V-U/B500A-xn-C
600A	0 ~ 600A / ± 600 A		CYHCT-C4V-U/B600A-xn-C
700A	0 ~ 700A / ± 700 A		CYHCT-C4V-U/B700A-xn-C
800A	0 ~ 800A / ± 800 A		CYHCT-C4V-U/B800A-xn-C
1000A	0 ~ 1000A / ± 1000 A		CYHCT-C4V-U/B1000A-xn-C

(n=5, $V_{cc} = \pm 12$ VDC; n=6, $V_{cc} = \pm 15$ VDC; n=7, $V_{cc} = \pm 24$ VDC, U: unidirectional, B: bidirectional
C=M: MOLEX connector; C=P: Phoenix Connector; C=S: Cable connection)

Supply Voltage:	$V_{cc} = \pm 12$ V, ± 15 V, ± 24 V $\pm 5\%$
Current Consumption	$I_c < 25$ mA
Isolation Voltage	2.5kV, 50/60Hz, 1min
Output Voltage at I_r , $T_A = 25^\circ\text{C}$:	V_{out} , see Table 1
Output Impedance:	$R_{out} < 150\Omega$
Load Resistor:	$R_L > 10$ k Ω

Accuracy

Accuracy at I_r , $T_A = 25^\circ\text{C}$,	$X < 0.5\%$ FS
Linearity from 0 to I_r , $T_A = 25^\circ\text{C}$,	$E_L < 0.3\%$ FS
Electric Offset Voltage, $T_A = 25^\circ\text{C}$,	$V_{oe} < 50$ mV
Magnetic Offset Voltage ($I_r \rightarrow 0$)	$V_{om} < \pm 20$ mV
Thermal Drift of Offset Voltage,	$V_{ot} < \pm 1.0$ mV/ $^\circ\text{C}$
Thermal Drift (-10°C to 50°C),	T.C. $< \pm 0.1\%$ / $^\circ\text{C}$
Response Time at 90% of I_p ($f = 1$ k Hz)	$t_r < 1$ ms
Frequency Bandwidth (-3dB),	$f_b = \text{DC} - 20$ kHz
Case Material:	PBT

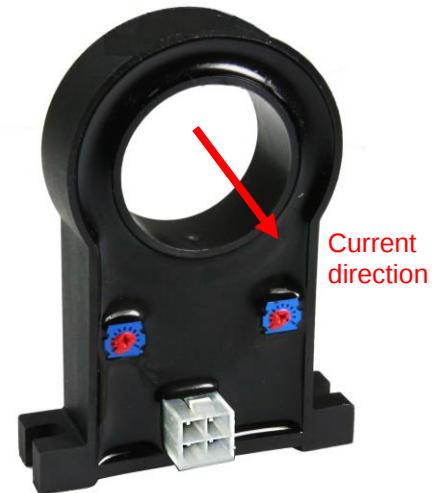
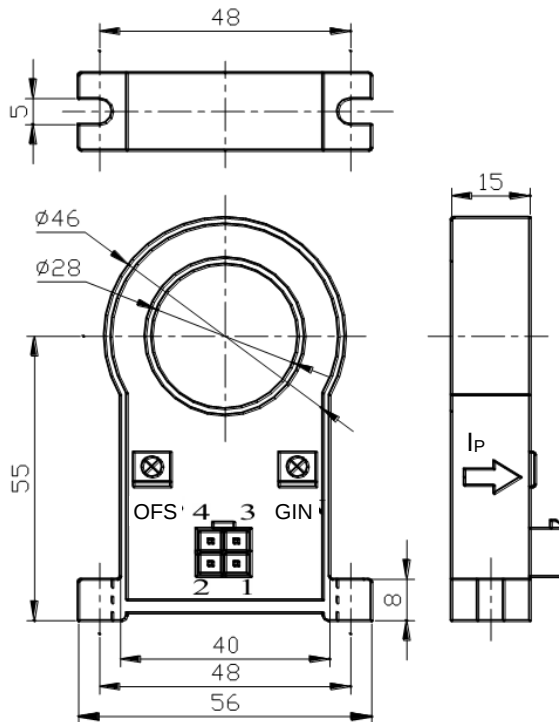


General Data

Ambient Operating Temperature,
Ambient Storage Temperature,

$T_A = -25^{\circ}\text{C} \sim +85^{\circ}\text{C}$
 $T_S = -40^{\circ}\text{C} \sim +100^{\circ}\text{C}$

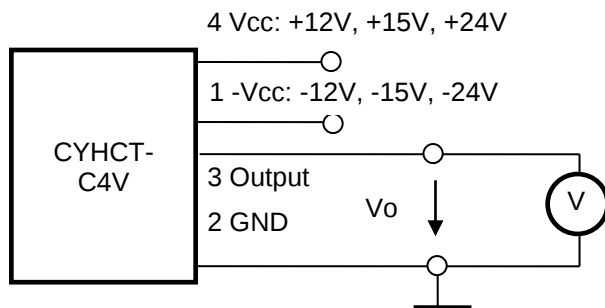
PIN Definition and Dimensions



1(-): -Vcc
2(G): GND
3(O): Output
4(+): Vcc

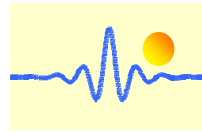
Connection

OFS: Offset Adjustment
GIN: Gain Adjustment



Notes:

1. Connect the terminals of power source, output respectively and correctly, never make wrong connection.
2. Two potentiometers can be adjusted, only, if necessary, by turning slowly to the required accuracy with a small screwdriver.
3. The best accuracy can be achieved when the window is fully filled with busbar (current carrying conductor).
4. The in-phase output can be obtained when the direction of current of current carrying conductor is the same as the direction of arrow marked on the transducer



Application Notes

1) Part number CYHCT-C4V-U/BxxxA-xn-C

U: unidirectional input current;
B: bidirectional input current;
xxx: current value;
x: output voltage (x=0: 0-4V; x=3: 0-5V; x=8: 0-10V, x=6: 0~±4V; x=1: 0~±5V; x=9: 0~±10V);
n: power supply (n=5, Vcc= ±12VDC; n=6, Vcc =±15VDC; n=7, Vcc =±24VDC,);
C: M: MOLEX connector; P: Phoenix Connector; S: Cable connection

Example 1: CYHCT-C4V-U100A-35-M Hall Effect DC Current sensor with MOLEX connector
Output signal: 0 ~ 5V DC
Power supply: ±12V DC
Rated input current: 0 - 100A DC (unidirectional)

Example 2: CYHCT-C4V-B100A-16-P Hall Effect DC Current sensor with Phoenix connector
Output signal: 0 ~ ±5VDC
Power supply: ±15V DC
Rated input current: -100A - 0 - +100A DC (bidirectional)

2) Relation between Input current and output signal

Table 2

Current Sensor CYHCT-C4V-U100A-35-M	
Input current (A)	Output voltage Vo (V)
0	0
25	1.25
50	2.5
75	3.75
100	5

Table 3

Current Sensor CYHCT-C4V-B100A-16-P	
Input current (A)	Output voltage Vo (V)
-100	-5
-75	-3.75
-50	-2.5
-25	-1.25
0	0
25	1.25
50	2.5
75	3.75
100	5